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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
10/577,304	04/28/2006	Hideaki Fujita	65472 (70868)	8038

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EXAMINER	
SONG, SARAH U	

ART UNIT	PAPER NUMBER
2874	

MAIL DATE	DELIVERY MODE
06/12/2008	PAPER

Please find below and/or attached an Office communication concerning this application or proceeding.

The time period for reply, if any, is set in the attached communication.

Office Action Summary	Application No.	Applicant(s)	
	10/577,304	FUJITA ET AL.	
	Examiner	Art Unit	
	Sarah Song	2874	

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE *3* MONTH(S) OR THIRTY (30) DAYS, WHICHEVER IS LONGER, FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

1)☒ Responsive to communication(s) filed on *28 April 2008*.

2a)☐ This action is **FINAL**. 2b)☒ This action is non-final.

3)☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

4)☒ Claim(s) *1-22* is/are pending in the application.

4a) Of the above claim(s) _____ is/are withdrawn from consideration.

5)☒ Claim(s) *22* is/are allowed.

6)☒ Claim(s) *1-21* is/are rejected.

7)☐ Claim(s) _____ is/are objected to.

8)☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

9)☐ The specification is objected to by the Examiner.

10)☐ The drawing(s) filed on _____ is/are: a)☐ accepted or b)☐ objected to by the Examiner.

Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).

Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).

11)☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

12)☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).

a)☐ All b)☐ Some * c)☐ None of:

1.☐ Certified copies of the priority documents have been received.

2.☐ Certified copies of the priority documents have been received in Application No. _____.

3.☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

* See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

1) ☐ Notice of References Cited (PTO-892)
2) ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)
3) ☐ Information Disclosure Statement(s) (PTO/SB/08) Paper No(s)/Mail Date _____.
4) ☐ Interview Summary (PTO-413) Paper No(s)/Mail Date. _____ .
5) ☐ Notice of Informal Patent Application
6) ☐ Other: _____.

DETAILED ACTION

Continued Examination Under 37 CFR 1.114

1. A request for continued examination under 37 CFR 1.114, including the fee set forth in 37 CFR 1.17(e), was filed in this application after final rejection. Since this application is eligible for continued examination under 37 CFR 1.114, and the fee set forth in 37 CFR 1.17(e) has been timely paid, the finality of the previous Office action has been withdrawn pursuant to 37 CFR 1.114. Applicant's submissions filed on February 27, 2008 and March 11, 2008 have been entered. Claim 1 has been amended. Claims 1-22 are pending.

DETAILED ACTION

Claim Objections

2. Claim 1 is objected to because of the following informalities: "the axial path" lack proper antecedent basis. Appropriate correction is required.

Claim Rejections - 35 USC § 103

3. The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

> (a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negatived by the manner in which the invention was made.

4. **Claims 1-21 are rejected under 35 U.S.C. 103(a) as being unpatentable over Minamio et al. (U.S. Patent 6,864,117 previously relied upon) in view of Fukasawa et al. (U.S. Patent 6,396,082 previously relied upon).**

5. Regarding claims 1, 4, 5, 15, 16, 19 and 20, Minamio et al. discloses an optical element sealing structure comprising a mounting body 3/1 having a high thermal conductivity (metal

leads 3 have high thermal conductivity) provided with a light transmitting section through which light traveling along a predetermined optical path passes; an optical element (e.g. CCD) 4 having an optical surface which is directed to the light transmitting section, and is mounted such that the optical element blocks the light transmitting section at one end; and a sealing body 6 that is formed in a region excluding the optical path, and seals the optical element mounted on the mounting body, wherein a surface of the optical element surrounding the optical surface is attached to a surface portion of the mounting body in a manner establishing high thermal conductivity therebetween (through bump electrode 7). The sealing body is formed in a region of the optical element opposite (i.e. facing) to the mounting body. Note transmitting body 5, lead frame 3 and sub mount 4 wherein the optical element is mounted on the lead frame via the sub mount. The exterior terminal portions 3b are exposed to the atmosphere around the sealing structure. The base 1 permits the sealing structure to be optically coupled with a light-transmitting medium (e.g. lens), thereby constituting an optical coupler.

6. Minamio et al. does not expressly disclose the sealing body to be made of molding resin. However, Fukasawa et al. discloses a similar device comprising a sealing body 38 that is made of a molding resin and is formed by molding. Therefore, it would have been obvious to one of ordinary skill in the art to provide a sealing body made of molding resin to enable complete protective encapsulation of the optical element while maintaining desired device thickness. Furthermore it is noted that the manner in which a device is made is not germane to the issue of patentability of the device itself.

7. Regarding claims 2 and 3, although not expressly disclosed, increasing environmental resistance of the sealing body, providing a connection body with wires for establishing electrical

connections, and matching linear expansion coefficients of the materials in the structure would have been obvious to one of ordinary skill in the art for reducing noise, relaxing alignment tolerances, and for improving structural longevity, respectively.

8. Regarding claims 6-9, the selection of any well known material would have been obvious to one of ordinary skill in the art to optimize the desired characteristics of the components. Furthermore, Figure 1 discloses the claimed contact areas, wherein the sealing body and the mounting body are covered with the transmitting body (i.e. the transmitting body is disposed over the sealing body and the mounting body).

9. Regarding claims 10 and 11, although not expressly disclose, it would have been obvious to one having ordinary skill in the art at the time the invention was made to secure the transmitting body to the mounting body using an adhesive for improving structural integrity. A light-transmitting adhesive having a refractive index higher than that of air and filled between the optical surfaces would also have been obvious for providing an index-matched medium within the optical path for reducing losses.

10. Regarding claims 12 and 13, positioning section 9 has a stepped taper wherein the diameter is reduced toward the light-receiving surface of the optical element (column 5, lines 4-26).

11. Regarding claim 14, the attachment area between the transmitting body and the sealing body is smaller than the surface area on a side where the sealing body is in contact with the mounting body as seen in Figure 1.

12. Regarding claims 17 and 18, Minamio et al. discloses an aperture but does not disclose the claimed direction of taper (Figure 6). However, it would have been obvious to one having

ordinary skill in the art at the time the invention was made to provide the reverse taper for a light emitting device, whereas the taper shown for Minamio et al. is for a light-receiving device, in order to optimize the coupling of light propagating in the reverse direction.

Allowable Subject Matter

13. Claim 22 is allowed.

14. The following is a statement of reasons for the indication of allowable subject matter: Minamio et al. in view of Fukasawa et al. does not disclose or suggest the sealing molding resin molding step in a state where the mounting body carries thereon the optical element at one end portion, and wherein the mold blocks the light transmitting section at another end portion.

Response to Arguments

15. Applicant's arguments filed February 27, 2008 have been fully considered but they are not persuasive. Applicant asserts that the surface area of contact between the bumps (protrusion electrodes) 7 of Minamio provide at best a very small area of contact between the image element 4 and the wires 3 that is not highly conductive of a heat build up and therefore does not teach or disclose the presently amended claims. Examiner respectfully disagrees.

16. The contact area provided between a surface of the optical element and the mounting body of Minamio et al. is deemed to be sufficient to establish high thermal conductivity therebetween due to the thermally conductive nature of the mounting body (leads 3) and the protrusion electrodes 7. That is, where the mounting structure 1 has high thermal conductivity and where the connection structure has high thermal conductivity 7, it is apparent that the element mounted thereto is mounted in a manner establishing high thermal conductivity. Furthermore, Applicant has not defined the relative term of “high thermal conductivity" with any

quantity or threshold to preclude Minamio et al. from reading upon the limitation. Therefore, the claims are rejected over the prior art of record as noted above.

Conclusion

Any inquiry concerning this communication or earlier communications from the examiner should be directed to Sarah Song whose telephone number is 571-272-2359. The examiner can normally be reached on M-Th 7:30am - 6:00pm.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Rodney Bovernick can be reached on 571-272-2344. The fax phone number for the organization where this application or proceeding is assigned is 571-273-8300.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see http://pair-direct.uspto.gov. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free). If you would like assistance from a USPTO Customer Service Representative or access to the automated information system, call 800-786-9199 (IN USA OR CANADA) or 571-272-1000.

/Sarah Song/
Sarah Song
Primary Examiner
Art Unit 2874